

REMARKS

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, claim 7 has been cancelled, while claims 1 and 11 have been amended to include the limitations of cancelled claim 7.

The Examiner has rejected claims 1-3, 6, 7 and 9-11 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,453,115 to Boyle in view of U.S. Patent Application Publication No. 2003/0077073 to Lin et al. The Examiner has further rejected claims 4 and 6 under 35 U.S.C. 103(a) as being unpatentable over Boyle in view of Lin et al., and further in view of U.S. Patent 7,046,916 to Morris et al. and U.S. Patent Application Publication No. 2002/0018646 to Nishi et al. Furthermore, the Examiner has rejected claim 8 under 35 U.S.C. 103(a) as being unpatentable over Boyle in view of Lin et al., and further in view of Nishi et al.

The Boyle patent discloses a digital video recording system which generates an index data structure for displaying a video stream in trickplay mode, in which a user interface is provided to allow a user to implement a trickplay mode.

The Lin et al. publication discloses user selectable variable trick mode speed, in which various methods are disclosed for effecting variable trick mode speed.

The Examiner has indicated that Lin et al. discloses the claim limitation "prompting the user on the user interface to select how many B and P-frames are inserted during the trick play mode", and points out Fig. 4 and paragraphs [0049]-[0053].

Applicant submits that the Examiner is mistaken. In particular, the noted paragraphs in Lin et al. state:

"[0049] Importantly, the pictures can be repeated based on the type of pictures that are present in the segment selected for playback. In the case of MPEG formatted information, a GOP can include I-pictures, B-pictures and P-pictures. In the case of a B-picture, the data representative of the B-picture can be copied and resent for display on the display device. Furthermore, it can also be necessary to alter the temporal reference that indicates the intended display order of the pictures in a GOP.

"[0050] In the case of I-pictures and P-pictures it can be preferable repeat I-pictures and P-pictures by sending dummy pictures. However, in the case of B-pictures, the data representative of the B-pictures can be repeated by copying and resending the data.

Notwithstanding, the invention is not limited in this regard. Subjectively, a dummy picture is an accurate repetition of the picture from which it is predicted. Moreover, a dummy picture is equivalent to and can repeat the picture from which it is predicted. In this regard, decoded dummy pictures can be indistinguishable from the picture from which the dummy picture is predicted from. Advantageously, since I-pictures and P-pictures typically contain more bits than B-pictures, it is preferable to repeat I-pictures and P-pictures with dummy pictures which contain significantly less bits than other pictures. Notably, this can result in the elimination of any problems associated with exceeding a bit rate of the channel between the decoder and the playback device.

"[0051] FIG. 4 is a flow chart illustrating exemplary steps for forward slow trick mode during variable trick mode playback in accordance with the inventive arrangements. Referring to FIG. 4, in step 405, a display time parameter can be determined for the current segment. In step 410, a trick mode display time parameter required for displaying the current segment at a selected slow trick mode playback speed can be determined. The trick mode display time parameter can be determined by dividing the trick mode display time from step 405 by the selected slow trick playback speed. In step 415, a determination can be made regarding which pictures in the segment are to be repeated and how many times they should be repeated during the determined display time identified by the display time parameter. In step 420, the B-pictures can

be repeated by copying and the I-pictures and P-pictures can be repeated by inserting dummy pictures.

"[0052] In accordance with the inventive arrangements, the pictures in a segment that will be repeatedly displayed to achieve a selected trick mode playback speed can depend on the structure of the segment. For example, in a case where there are no B-pictures present in a GOP, then it can be preferable to add dummy pictures for playback during slow trick mode playback. In a very slow trick mode where I-pictures and P-pictures comprise approximately one-third of the pictures in a GOP, playback might not be visually pleasing if the B-pictures are not repeated. In this case, it can be preferable to copy the B-pictures and repeat the I-pictures and P-pictures using dummy pictures in order to ensure a visually pleasing experience.

"[0053] In light of the foregoing description of the invention, it should be recognized that the present invention can be realized in hardware, software, or a combination of hardware and software. User selectable variable trick mode according to the present invention can be realized in a centralized fashion, or in a distributed fashion where different video processing elements are spread across several interconnected systems. Advantageously, in such an entertainment system, the information file can be used to communicate information between independently and remotely located MPEG decoders. Any kind of computerized or digital MPEG processing system, or other apparatus adapted for carrying out the methods described herein, is suited."

A careful reading of the above will note that Lin et al. only indicates the selection of the video segment and the selection of a slow trick mode playback speed. All of the other factors discussed in the above paragraphs are "determined" by the Lin et al. apparatus. Applicant submits that there is no disclosure or suggestion of "prompting the user on the user interface to select how many B and P-frames are inserted during the trick play mode".

The Morris et al. patent discloses encoded video image formatting, in which user input means are provided where upon entering trick mode, the CPU directs the decoder to skip frames by

selecting every Nth additional data block and displaying just the respectively identified I-frames, N being variable in response to user input.

The Nishi et al. publication discloses an image coding method, decoding apparatus, and computer program implementing a display cycle identifier, which arguably teaches the selection of how long each I-frame is displayed.

However, Applicant submits that neither Morris et al. Nor Nishi et al. supply that which is missing from Boyle and Lin et al., i.e., "prompting the user on the user interface to select how many B and P-frames are inserted during the trick play mode".

In view of the above, Applicant believes that the subject invention, as claimed, is not rendered obvious by the prior art, either individually or collectively, and as such, is patentable thereover.

Applicant believes that this application, containing claims 1-6 and 8-11, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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